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ABSTRACT

Nova University (Florida), which began its initial efforts in distance-delivery teacher education in 1983, now has doctoral and master's degree programs in which professional educators, information specialists, trainers, and others in similar fields are committed to a program of intense work and challenge through telecommunications. Students who enrolled in the early program stages faced a number of problems with the compatibility of technology, but these were surmounted with hard work and ingenuity. Students are now required to participate in scheduled electronic classroom sessions during their courses. Up to 23 students can be online at the same time, with one instructor. Instructor and student questions can be answered, and a recording is made of the classroom session. In February 1991, the Child and Youth Studies doctoral program began its first National Cluster. Students meet on campus twice a year, rather than monthly (the usual cluster format) and attend a week of concentrated workshops in July. This field-based approach allows professionals from all over the country to meet their needs for inservice education. So far, the system is working well, and has a bright future. A chart and a fact sheet further describe the programs of Nova University. (SLD)

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The Use of Telecommunications in Graduate Teacher Training

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The Use of Telecommunications in Graduate Teacher Training

Al P. Mizell, Ed.D.

ABSTRACT

The Geographically Disadvantaged

In today's educational jargon, efforts to meet the needs of "disadvantaged students" have become of special importance to all of us. We usually think of those who have a physical, mental, or emotional handicap as being disadvantaged. As we look toward achieving equity in our society, we have attempted to provide equal access to all types of opportunities for minorities of all types.

It seems to me that one element of the disadvantaged population that has not been seriously serviced is the group of individuals who do not live near enough a large population center where they have ready access to the educational opportunities that they need or desire. In other words, these are the "geographically disadvantaged." A few efforts have been made, historically, to meet the tertiary educational needs of this group through the "Open University" or "University without Walls" concept. The England Open University, NYU's American Open University (Need University of the Midwest), and Nova University's field-based programs are among the best known in this area.

With the advent of relatively inexpensive high technology access, other efforts became popular. The "College of the Air" concept using televised lectures, etc. with telephone and mail contact, met some of the needs of those seeking higher education courses and even degrees. This approach worked very well for the "one-to-many" type of instruction where a large enough audience exists in a geographic area to warrant the expense of a broad, televised broadcast beamed to a large number of students.

One-To-One Deliver Techniques

More recently, society has recognized the needs of the isolated student to access education on a smaller scale where it isn't economically feasible to use a satellite and television to broadcast a signal across the country -- or world -- to reach 20 or 30 students in a particular major. For this type of specialized program delivery, we need an economical one-to-few method of delivering instruction. Various institutions have begun programs to deliver instruction at a distance.

Advantages Of Email

In California in 1981, the Western Behavioral Sciences Institute offered a two-year certificate experience that emphasized the use of email and online contact with well-known

experts in the field. Each student received a Kaypro CP/M computer and modem as part of their fees. It shouldn't be suprising that electronic mail (email) was the most important and frequently-used technological facility in this early approach to an electronic delivery system. The use of email is a natural feature for distance learning of any type and should be expected to be an integral part of any online degree programs. A major advantage of email is that it eliminates the "game" of "telephone tag!" With email, the message or paper sits patiently, ready to be read at the recipient's convenience. In an online program, using the student's home computer, modem, and telephone line, the student and instructor can interact directly through "email" or in "real time" through the electronic "talk" facility. Papers can be prepared in a word processing program by the student and then uploaded over the modem and electronically mailed to the instructor. The instructor can then download the paper and critique it, using electronic mail (email) to send his/her evaluation back to the student.

The Development Of Distance Delivery Programs At Nova University

In August 1983, Nova University commenced its initial efforts in this field. Dr. Abbey Manburg, at Nova University in Ft. Lauderdale, Florida, provided five of his master's students (in the Master's for Child Care Administrators' Program) with a Commodore 64 computer and modem. Using these machines, email was an important element in this distance program. In August of 1983, Dr. John Scigliano initiated the Doctor of Arts in Information Science (DAIS) program using the student's own computer or a provided Zorba CP/M transportable with modem (300 baud!) to connect with the University. At this point, the University installed the Berkeley version of AT&T's Unix operating system on its VAX minicomputer as the host machine. Using Tymnet for long distance connections, the first doctoral program in the country to be offered via telecommunications was on its way to national recognition. In January, 1984, the author completed development of the doctor of education in computer education program and started the first course with the initial pilot group of students. Nova's efforts in developing and offering instruction through telecommunications (using a computer, modem, and telephone line) expanded significantly from this point forward. Today, over 300 students are enrolled in these doctoral programs; a number of others are pursuing their master's degree through distance learning via telecommunications. In these online programs at Nova University, professional educators, information specialists, trainers, and others in similar fields committed to a three-year program of intense work and challenge.

Equipment Requirements

To enroll in the online programs, each student had to have evening and weekend access to a computer and modem. Although MS-DOS machines were the instruments of choice, it was possible to use almost any type of computer system. The University staff did most of their work on MS-DOS machines; therefore, students could expect to receive the greatest help if they also used MS-DOS computers. However, some students used CP/M machines; others used Apple IIe computers; while still others elected to use the MacIntosh. Generally, those using these alternative systems communicated with other students or their

local reps to make their machines behave in a manner consistent with our host computer's needs. One example of a typical problem encountered was the lack of a tilde key on the Commodore 64; another is the absence of a key marked "Escape" on the Mac. There are ways around these problems but they have to be discovered. Problem solving ability and patience are critical attributes for online learners to be successful.

Students could select the type (internal or external) and speed of modem they wanted to use although we soon began recommending a 2400-baud modem. (With the increasing use of optic fiber telephone lines, it may not be long before 9600 baud becomes the modem speed of choice.) Students were free to elect the brand of communications software they wanted to use. The only restriction was that it must enable them to emulate a common terminal type (usually the vt-52 or vt-100) so our host computer knew how to communicate with them. We recommended two brands of communication software that our staff used most frequently so we would be in a better position to try to answer their questions. We offered to provide copies of the public domain program, Kermit, for the Apple II, Mac, or MS-DOS operating systems. There is no charge for this software; however, the documentation is not as user-friendly as that of many others. Kermit has always worked well for us. Our second program is Procomm. Many of the staff on campus have elected to use this shareware program. Although copies are free, once you decide to use it, you are morally obligated to send a $30 to $55 fee to the developers (information appears on screen in Procomm) to become a legitimate, registered user. We generally find Procomm (or PCPlus the Unix Operating System an updated version) to be user-friendly and easy for novices to learn how to use.

Once students had the necessary equipment and they had been accepted into one of the masters or doctoral programs, they were ready to begin learning how to use the operating system that we used on our host computer--Unix. We began by using the Berkeley version of Unix that was an educational modification of AT&T's original Unix program. AT&T had developed this to be a viable system for use by their employees who were not programmers. However, they also leased the system out to universities at a very low cost. In this way, it became an operating system of choice by many computer scientists who went on into the business world. It was also leased to businesses but at a higher fee. Dr. John Scigliano made the decision to use this system at Nova and it proved to be an excellent choice. Although we used it mainly as a tool for the delivery of instruction, students naturally became proficient in its use and that side-effect led to a number of new positions for our graduates because they knew how to manipulate the Unix system.

Most of the students in these initial programs had an affinity for technology even though they were not computer scientists. A few were complete novices and had a lot of learning to do in their first year in the program. Most succeeded and became successful users of the system so it could fade into the background and become rather transparent to them. Their focus was on the content of their particular graduate program. However, once the delivery tool was mastered, they had access to a number of facilities that traditional students could not access in their regular three hours a week class meetings on campus.

Degree Program Format

Students working in these online programs followed a format in which they spent the equivalent of two weeks each year (for three years) in live class meetings. These could be attended in the form of two one-week meetings on campus in Fort Lauderdale (winter and summer) or in four extended weekend meetings in a cluster location in one of the four regions of the U.S. plus a shortened week on campus in the summer. The rest of their time was spent using formal study guides to direct their activities through the courses.

Online Utilities Students Can Use

As part of their activities, they read in texts, did library research, prepared papers, and went on line for various activities and purposes. These included asking questions via email or through a user-friendly utility created by the Nova Computer Center staff, known as "eq" (i.e., "Electronic Question"). The advantage of eq is that it logs the student's specific question and the instructor's reply dates, subject, etc. for future reference and the logs help insure that the question is not accidently neglected. A menu system makes this an easy utility to use.

In addition to eq, there are related utilities; other examples include "ei" ("Electronic Information" to find answers to general questions), "es" ("Electronic Student" to submit assignments), "et" ("Electronic Teacher" for the instructor to use to grade assignments), etc.

Writer's Workbench (wwb) and Learn

Then, in addition, there are other utilities to help the student online. There are some cai-type instructional lessons. These are accessed by typing "learn" and the name of the lesson desired. After writing a paper in a word processor on the student's computer at home, the file is saved as a standard ascii or DOS file. It is then uploaded into the Unix system online. Once saved in a file online, it is run through a writing analysis program developed by AT&T that is known as "The Writer's Workbench" or "wwb." This program does not correct style and grammatical errors but it points out potential problems and lets the writer decide what to do about it. It tells everything from reading level (Kincaid formula) to errors in spelling and overused phrases. It even reports the percentage of complex and simple sentences and a comparison between active and passive sentences. Wwb also suggests how to correct these errors. There are many other elements in a typical report; the analysis of a one-page paper can run two to three pages long.

The Electronic Classroom (ecr)

Another especially important utility is the "Electronic Classroom" (ecr). Students are required to participate in scheduled ecr sessions during their courses. The instructor prepares a set (usually 5 to 10) of "frames" to show the students. Each frame is stored as a separate file on Unix and given its own file name. Each frame is like an overhead transparency; it is

the equivalent of a blackboard--full of information. It is usually arranged to be neat and attractive with white space like a good transparency. We discourage instructors filling the frame with writing just as we would for their overhead transparencies. The group of frames are then listed by name in a "course file."

Up to 23 students can be in the same "classroom" online at the same time with one instructor. Several classrooms (theoretically over 20) can be running at the same time although this tends to slow down the system's response time so we use an online scheduling program to try to avoid such conflicts. When students and the instructor enter the ecr online at the scheduled time, the students' names appear in the bottom four lines of the screen in an area known as the "student display window." The instructor gives his/her greetings in the upper 16 lines in the area known as the "Instructor's Blackboard." The instructor then calls the "course" up and each frame is automatically printed on the blackboard on each student's computer screen. Students may be anywhere in the world for this activity as long as they are online at the same time. In my first ecr session, I had two students in Germany, one in Puerto Rico, and several around the U.S. communicating together with me.

After each frame, the instructor may ask a Yes/No or multiple choice (up to nine choices) question and watch the students respond on the teacher's screen. The answer appears in front of each student's name on the display. Any student can indicate he/she has a question by placing a question mark in front of his/her name. This question mark appears on everyone's screen. It is similar to raising your hand in class. The instructor calls on you when it is appropriate. Students can prepare their questions or comments in a four-line buffer so they can print it on the screen all at once when called on so everyone can see it right away and not have to wait for a slow typist to type out the comment a letter-at-a-time! The system will even keep track of who "raised their hand" first so they are called on in the correct order. A recording is usually made of the entire ecr session and stored so students who were unable to make the session when it was scheduled or wish to play it back later for review can do so.

The New National (Electronic) Cluster In The Child And Youth Studies Doctoral Program

In February of this year (1991), the Child and Youth Studies doctoral program at Nova University began its first National Cluster. This cluster consists of non-technology majors pursuing their doctorate from many parts of the country using telecommunications. As the developer and former director of the online computer education masters and doctoral programs, I was well-versed in ways we could use these online capabilities in a more traditional graduate program for non-technology professionals. Therefore, I have served as the consultant to the Child and Youth Studies program to create and provide the new National (or "Electronic") Cluster. Our Marketing Coordinator was careful to interview and inform potential students for this new approach that there was an expectation that they would purchase and learn to use technology in addition to the regular content of the program. They had to be prepared for a different way of learning. They had to be self-directed since they

would not meet monthly with a professor flown into their location as was typical in our field-based programs up to this point.

A natural incentive to new students was that they did not have to drive or fly on weekends to the nearest state where one of our field-based clusters was located. They could do most of their work from home. The initial 18 pilot students for this new approach saw the advantages and enthusiastically began their trek toward getting online and beginning their first class in February, 1991. We changed the order of their coursework so they began with an introduction to technology and went deeper into telecommunications and hands-on experience with the computer and modem in their initial meeting on campus in February. This was important so they could then move on into their first study area ("Leadership") in their degree program in March.

Expansion And Dissemination

These students meet on campus in Fort Lauderdale for an extended weekend twice a year in lieu of the monthly weekend cluster meetings. They also attend a week of concentrated workshops in July. Students communicate regularly online with their classmates, faculty, and central staff. It turns out that there is closer contact between online students than usually occurs in live classes when the students are busy, working professionals. There is no telephone tag involved in these communications. In fact, students can communicate at any hour of the night or weekend that is convenient. Faculty or other students can send their replies at a time that is convenient for them.

WORLD-WIDE ACCESSIBILITY

In seeking graduate educational opportunities, students living in rural areas, cities that are not serviced by a major university, or in another country, frequently find it difficult to find a program that caters to the needs of the working professional. In other words, they need a program that offers classes after working hours or on weekends in a timely manner and at a location that doesn't take hours to reach. Even when a university offers "drive-in" classes, these are frequently only provided for part of the program so the student must still take time off from work to take the classes they need or to fulfill residency requirements on campus.

One of Nova University's major goals has been to meet the realistic needs of such professionals for in-service education. This training usually results in the awarding of a graduate degree as well. Through our field-based approach, professionals from various locations in the region are connected and important professional networks are established. With our online approaches, these networks are extended significantly. For example, I have a doctoral graduate in Israel, another in Finland, etc. and I am still able to communicate with them online with the same convenience that I can send an email message or "talk online" with a student in the next city. Our continuing network extends beyond school days and becomes an important side effect of this delivery system in overcoming "geographical

becomes an important side effect of this delivery system in overcoming "geographical isolation." We also have ready access to various experts around the country through our online connections using the Internet system. Recently, we joined the Kids-91 network in Norway and our 10-15 year-olds in our lab school can communicate with youngsters around the world. Through our online news, we can make our students and graduates aware of such new opportunities so their affiliation with Nova does not need to stop once they graduate. This is another way to overcome the handicaps of the "geographically disadvantaged!"

So far, it has been a very successful beginning for such a new approach. We assume that if it continues to work as well as it began, we will expand the use of such a delivery system into our other graduate programs in education. The Programs for Higher Education are already starting to make their plans to offer one of their courses in this online format to students electing to enroll. The masters programs (Graduate Education Modules or "GEM") are beginning their planning to expand their current offering of two majors online to a similar approach with a few local meetings in their area plus extensive online contact during each nine-credit module of courses. The future for this delivery system is bright and it has every reason to grow and expand. Nova University has always been an institution to forge ahead to the cutting edge in the delivery of professional training that is convenient and accessible. Now that our field-based models are being used extensively by other institutions, it is time for us to push on out to the delivery of instruction through technology so we can continue to lead the way.

Being an innovator means that mistakes will be made. Some of the approaches we use will not be successful and we will have to regroup and revise. We follow a systems model for the development of our curriculum (modified "Gagne" model) and it emphasizes the collection of formative evaluation data and a cycle of revisions until the product works the way we expect it to work. Once it is shown to work well, we can expect others to use the same model. This is the way it should be. That is why we are happy to share our efforts with others and to help you take advantage of the lessons we learn. At this point, as we look back over the past eight years, we are happy to report that we have had more successes than failures with the online delivery of instruction using telecommunications. We look toward the expansion of distance learning to meet the needs of the "geographically disadvantaged" learner at all levels of education.

Nova University

Graduate Programs in the Center for the Advancement of Education

Program	*Audience*	*Format*	*Program Duration*	*Financial Aid Available*
M.S. Program in Education (Graduate Education Module Program)	Teachers and administrators seeking degrees, renewal of certificates and certification in 20 majors	Saturday Classes. Intensive summer scheduled. Directed Study partially delivered via telecommunications	12–14 months	yes
M.S. in Speech and Language Pathology	Persons seeking a degree and certification in speech-language pathology	Saturday and evening classes. Intensive summer schedule	2 years	yes
M.S. in Child and Youth Care Administration	Professionals in administrative positions employed by child care centers, youth facilities and family support programs	Directed Study	26 months	yes
Ed.D. in Child and Youth Studies	Professionals who work with children and youth, ages birth through 18	Saturday classes National Cluster via telecommunications	3 years	yes
Ed.D. in Educational Leadership	Professionals employed in administrative positions in K-12 schools	Saturday classes	3 years	yes
Ed.D. in Higher Education	Professionals employed in higher educational, vocational education and adult education	Saturday classes (Option! for one course to be delivered via telecommunications	3 years	yes

Center for the Advancement of Education

NOVA UNIVERSITY

Fact Sheet

- Nova University is the second largest independent University in Florida (11,000 students).
- The Center for the Advancement of Education is the largest graduate school of education in the United States.
- Nova's graduates have an impact on education.
  - — two consecutive Teachers of the Year in Florida were graduates of Nova's GEM Program (M.S. in Education). Teachers of the year were chosen from among 120,000 teachers.
  - — six superintendents from among the nation's largest school districts are graduates of Nova's Doctoral Program in Educational Leadership (New York, Atlanta, Phoenix, Denver, Dayton, Long Beach).
- The Master's Program in Speech and Language Pathology received accreditation from the American Speech-Language-Hearing Association (ASHA). Nova's program is the only accredited program in South Florida.
- Graduate Programs utilize a weekend format for instruction for the convenience of the working professional.
- Instruction in all programs focuses in the interaction of theory with practice.
- Students complete work-related, problem-solving projects.
- Nova University is accredited by the Southern Association for Colleges and Schools (SACS).

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